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(54) Title: SKILL AND RESSOURCE ALLOCATION METHOD

(57) Abstract: There is provided a method and system for the allocation of resources available to an organisation to complete a series of tasks which, together, allow the completion of a project. The method involves the steps of identifying the tasks required for the project and, for each task, reviewing the resources available with respect to resource availability and skill capability for performing the work required for the task. When the analysis is complete a resource or resources are allocated. The task can be prioritised and both apparatus and human resources are considered.

Skill and Resource Allocation Method

The invention which is the subject of the current application relates to the provision of a method and system which allows optimisation of the allocation and usage of the resources, in terms of both human resource and equipment resources to perform specific tasks.

Many organisations recognise the need for constant change and improvement and to do this they typically use the techniques of project and programme management. Undertaking such projects nearly always involves the use of team members (human resources) to undertake specific tasks which in combination allow the project to be completed.

In practice it is normal for each team member to be involved with many projects over any period of time and there is a need to balance the requirements for the person's time on each project with those of other projects and/or other business requirements.

Conventional project management techniques such as PERT allow the project manager to plan to over utilise each specific resource. It is often the case that each resource is scheduled to be overloaded on each specific project, even more overloaded when seen in light of many projects and even more overloaded when other business requirements and personal commitments such as holidays and training are taken into account.

This overloading is particularly, but by no means exclusively, prevalent on many projects such as software development and engineering projects where a number of tasks need to be carried out concurrently but, for example, some of the resources may be

utilised elsewhere and this may have a knock- on effect on other tasks to be performed. Thus, while it is possible for these tasks to be scheduled in advance, as they are often dependent on other work, the schedules cannot be fully implemented to provide maximum benefit in any particular project. For example, in a software development project which includes the writing of code, the same can only be written once the assembly of the specification has been completed and the computers purchased and the human resources are available with the required skills. US 5408663 illustrates one resource allocation method but the resources are purely allocated in terms of availability and does not take into account the skills which each resource has in comparison to other resources such that in the is patent if a resource is identified as having a particular skill the assumption has to be made that all the resources have the same skill level. Furthermore in the prior art patent, once allocated, a resource has to continue to perform the task and there is no ability for the resources to be allocated in terms of relative skill levels.

In most organisations, a quantity of human and non human resources are available to perform the required tasks and the aim of the current invention is to provide a method to allow a schedule to be formed so that the future work load in terms of tasks is allocated to maximise the utilisation of the resources and the commercial benefit. Benefits are therefore obtained if the work can be scheduled such that the most possible resources are fully occupied. If resources stand idle waiting for additional work to do, there will be inefficiencies and the commercial benefits are reduced.

In a first aspect of the invention there is provided a method for forming a schedule of allocation of given resources to a series of

tasks which, in combination, are required to be performed to complete a project, said method comprising the steps of;
defining each of the resources available to be selected by the user,
identifying the tasks to be performed to complete the project and placing the same in an order with regard to previous tasks and following tasks,
allocating a time for completion of each task,
identifying the resource or resources required to perform the task,
considering all available and relevant resources for potential use in performing that task until those resource or resources which allow completion of the task in the required manner are identified and allocated; and
repeating the steps for each task until the available resources have been allocated to allow all of the tasks for the project to be completed and characterised in that the resources are defined in terms of available time, skill or skills and a value indicative of the resource ability to perform the skill or skills.

In a preferred embodiment the availability of the resources is calculated with regard to human resources in terms of working and non-working hours, and commitments like meetings and vacations. With apparatus the resource availability is calculated with regard to downtime requirements including service scheduling and the like.

In whichever embodiment the number of such resources available to perform the work is noted and each resource is analysed in terms of the "skills" which it offers i.e. that resource's ability to perform a type of task.

The method also identifies the tasks that need to be performed and each task is defined in terms of its predecessors and restraints so that a task which is indicated to be required to be completed before the task in question, is placed before the task in question and, equally a task which can be completed once the task in question has been completed is also indicated accordingly. For example, the task of building the roof frame on a building must follow the tasks of building the walls and purchasing the material for the frame, said purchase requiring customer approval and so each of these tasks are placed in the required order. Equally the schedule of these tasks has an effect on future tasks such as purchasing the slates for the roof and the task of placing the slates on the roof frame. Other specific deadlines may also be included in the schedule as appropriate.

The work content for each task is defined in appropriate terms but typically in relation to time units of resources. For example, one task may require 100 man-hours, 250 drill-days and 25 tester-days. The actual period of time for completion of the task is not necessary as the method allows the calculation of the schedule and also indicates an appropriate resource or resource combination to perform the task which can then be translated into a date and completion time.

Thus according to the method of the invention each task can be considered using the following steps:

1. The earliest possible start date of the task is calculated with respect to the preceding tasks which are required to be completed and relate to the particular tasks under analysis.

2. The first resource with the required skill is selected and its availability calculated with regard to the start date of the task.
3. Any non available periods for the resource are deducted.
4. Any available periods for the resource assigned to higher priority tasks are deducted.
5. The task is scheduled using the selected resource noting the ability to perform this kind of work and the completion date calculated.
6. The next resource that displays the required skill is selected and steps 2 to 5 are repeated.
7. When all appropriate resources have been tested for respective availability the task is scheduled by utilising the resource or combination of resources capable of finishing the task first.

In accordance with a further aspect of the invention there is provided a method for the scheduling of resources to perform a selected task from a group of tasks required to be completed to perform a project, said method comprising, for said task, the following steps;

the earliest possible start date of the task is calculated with respect to any preceding tasks which are required to be completed and which relate to the particular task under analysis;

a first resource with the required skill is selected and its availability calculated with regard to the start date of the task;

any non available periods for the resource are added to the time to be taken;

any time periods for the resource which are assigned to higher priority tasks are added to the time to be taken;

the task is scheduled using the selected resource with respect to the ability of the resource to perform the work of the task and the completion date is calculated;

the next resource that has the required skill is selected and the steps are repeated for each resource until all appropriate resources have been tested for respective availability; and characterised in that the task is scheduled for completion by utilising the resource or combination of resources which provide completion of the task with the earliest completion date.

Typically, in the assessment of each resource, a skill ability rating value for that resource in relation to the particular skill required for the task is taken into account in calculating the time required for that resource to complete the task.

Preferably the task is allocated a priority rating with respect to other tasks prior to analysis of the resource availability. In one embodiment the method includes the step of assessing the priority rating for the task with respect to the priority rating of any other tasks to which that resource is allocated.

In a preferred implementation the method is computer implemented and data is input into the computer to represent the tasks constituting the project, the dependency of the task on other tasks and data representing the available resources. Typically, for each task, the calculation of the start and completion date of the task is repeated for each of the resources in a computer database which is identified as having a skill ability to perform the task. Preferably the database includes, for

each of said resources, an ability rating value for the resource to perform the identified skill and said ability rating value is taken into account when calculating the time required for the resource to complete the task.

Specific embodiments of the invention are now described with reference to the accompanying Figures; wherein

Figure 1 illustrates one form of graphical display which illustrates the display generated for a particular project task;

In a first embodiment of use of the invention the required task is to drill holes and the following table indicates the starting position indicated to the method user:

Table 1

Resources available with the skill of drilling
two drilling machines i.e. two resources.

Task start time: 8am Tuesday 2nd Nov

Estimated time required for completion: 25 machine hours.

Skill ability rating Machine no.1 100% effective
Machine no. 2 50% effective

The user therefore knows that Drilling machine # 1 is 100% effective at drilling holes but is also informed from the already scheduled use of the machine that it is scheduled to be shut down for maintenance from 9am to 3pm on Wednesday 3rd November. The normal availability is 8am to 5pm Monday to Friday except for Bank Holidays. The machine is also already assigned to perform a drilling operation and this occupies the machine's availability for Thursday 4th November between 8-12pm.

The user is also informed that Drilling machine # 2 is 50% effective at drilling holes and is available 8am to 5pm Monday to Friday except for Bank Holidays.

In accordance with the method the task completion is first calculated with respect to Machine no. 1 for the following periods as shown in Table 2 below

Table 2 .

Time of Day	Date	Cumulative Hours Scheduled
8am - 5pm	2nd Nov	9
8am - 9am	3rd Nov	10
3pm - 5pm	3rd Nov	12
12pm - 5pm	4th Nov	17
8am - 4pm	5th Nov	25

Therefore the task is scheduled for completion using machine # 1 by 4pm on 5th Nov.

The method then repeats the calculation for the task using drilling machine # 2 and as this machine has no downtime scheduled the machine can always be available, but as the skill ability rating value is only 50% i.e. half that of machine no.1, machine no.2 takes twice as long, i.e. 50 hours, in terms of the hours needed to perform the task. This therefore means that the calculation for Machine no.2 indicates that the task will be complete at 1pm on 9th Nov as illustrated in Table 3 below;

Table 3

Time of Day	Date	Cumulative Hours Scheduled
8am - 5pm	2nd Nov	9
8am - 5pm	3rd Nov	18
8am- 5pm	4th Nov	27
8am - 5pm	5th Nov	36
8am - 5pm	6th Nov	45
weekend	7th Nov	45
weekend	8th Nov	45
8am - 1pm	9th Nov	50

. Thus, despite the unavailability already scheduled for machine # 1, machine # 2 cannot finish the task earlier due to its lower percentage ability and so the use of Machine # 1 would be proposed.

The method is capable of dealing with any number of tasks and any number of resources. Typically each task is allocated a relative order of priority so that they effectively "take" resource availability in order of priority - higher priority tasks "take" resource availability leaving any remainder for lower priority tasks. Simply raising a task's priority causes the method to recalculate the schedule for that task and all tasks of a lower priority. In the example above, raising the priority of the task to be completed to be greater than the priority of the task to which Machine # 1 was already allocated would cause the task to be scheduled for completion at 12pm on 5th November as it would "take" or utilise the four hour period on the morning of 4th November which would then become available. The previously allocated task would then be required to "take" machine # 2 or would "take" machine # 1 after the new priority task was complete.

The method can deal with multiple resources so that a proportion of one resource type can be allocated to one task and the remainder to another task. It can handle parallel tasks, e.g. a resource can be assigned to two or more simultaneous tasks on a part time basis so that, for example, a resource can be deemed to be 50% committed to one particular activity such as say programming and 50% committed to another activity such as writing specifications and thereafter be allocated accordingly.

Furthermore if a resource is unavailable for a period of time during the time for completion of a task, another available resource, which may have less ability, can be allocated to that task for the said period of time, thus introducing a further overall reduction in the time required to perform the task. Thus it should be appreciated that resources can be interchangeable to allow the completion of a task using more than one resource with the required skill and indeed using resources which have different ability rating values for that skill.

A further embodiment and example and use of the invention is in relation to human resource allocation only. Typically, one person, the team leader, is responsible for scheduling the time of a specific individual and they have the requirement to allocate human resources for the project, and tasks in the project. Each human resource is hereinafter referred to as a team member.

Each team member is first defined within the invention method in terms of their identity, skill set and ability to perform the skills, working week and any special variations to that working week. This effectively allows the construction of an availability profile in terms of the number of hours each day that the resource is expected to be available to do task work.

A list of tasks is then defined which are or may be applicable for input from specific team members. The tasks are defined by their identity, the amount of work estimated to be required to allow completion and any known constraints. The known constraints may be, for example, start dates or the amount of time it is desirable to devote to the tasks whoever the team member might be, expressed as a percentage of full time.

Each of the tasks is assigned to an individual team member to allow the required work to be performed.

Typically the method firstly concentrates on the highest priority task and starts at the first day on which work may commence on the task. Time on the task is then allocated (scheduled) for the selected team member day by day. This allocation process can take into account any or any combination of the following:

The earliest possible start date and time of the task
The availability of the team member
The amount of time that team member should devote to that task
The total amount of effort required to perform the task.

An example of this is provided as follows. A specific task is to write a project specification and it is estimated that this task will take 40 hours to complete. Team member 1 is allocated this task by the team leader. Due to external restraints, work on the same cannot begin until 9.00am on Monday 1st March and team member 1 is not expected to spend more than 50% of his time on the task

Team member 1 has Monday 1st March free of scheduled work and other commitments so therefore is scheduled to spend 50% of their full working day of 8 hours to the task – 4 hours

On Tuesday Team member 1 has a regular project meeting in the morning which normally takes 2 hours so he is scheduled to devote 3 hours to the task (8hrs-2hrs/2).

This means that by Tuesday evening it is predicted that Team member 1 will have devoted 7 hours to the task.

The method continues taking each day (or other time unit) at a time until the required 40 hours of Team member 1's time has been allocated to this task. The date and time when this task is due to become completed is recorded. Any time remaining is regarded as available and described as the 'remaining availability'.

If Team member 1 is now allocated another task of a lower priority than the one above, the method uses up any free time left over from higher priority tasks. The same process is then continued, using up any time remaining as available after the higher priority tasks, fixed commitments and personal issues have been scheduled.

In addition to the example and method illustrated above, another set of factors can be introduced whereby certain team member skills are defined in the model and each team member is measured in terms of their ability to deliver each skill on a range of 0 - 100%. An example can be the task of 'specification writing' where certain team members will be expected to perform more rapidly and/or to a better level than others.

In this case a skill may be assigned to a task rather than a team member with an estimate of the effort required to perform the task assuming a 'standard' or 'typical' team member.

An example of the method which can be used to deduce how much effort a team member must contribute to complete the task is now given. Team member 1 has a 50% skill ability rating value to perform this kind of work. This percentage is determined with respect to a predetermined "standard" such as an average time, intellect level, experience or any combination

of these factors. Thus, in this case Team member 1 would be expected to take twice as long as the predetermined "standard" resource to perform the task skill. If the effort estimated for a standard team member is 40 hours, Team member 1 will need 80 hours. Having calculated that Team member 1 will require 80 hours to perform this task, the method can be used to calculate when Team member 1 can perform the 80 hours of work on the task using the process outline given above.

The process can be repeated for any number of team members and a table drawn up indicating when each team member will be able to start and finish the task and a rational decision can then be made balancing suitability and timing with needs for development and other team issues.

In this method it can normally be assumed that the highest priority task is allowed to utilise a team member's time first thereby reducing their effective availability for other tasks. The second highest task does the same and once again reduces effective availability and so on for all the tasks which require the team member's input.

In a further example of the invention the resources available are interactively adjusted and levelled in immediate response to the input of demands and other data. There is no 'level now' or other resource levelling batch process command. In accordance with the invention the resources and tasks may be scheduled in two ways:

In the first way, if a task is required to be performed by specific resources say persons named Fred and Joan, and a Machine, machine # 14, the invention immediately schedules the task using the earliest spare capacity that the resources have. Thus for the

sake of the example if we assume Fred has 4 hours available on Friday, does not work Saturday and Sunday, has Monday and Tuesday free but is committed on Wednesday then if the task needs 20 hours of Fred's time, the system of the invention will use the spare time of Fred until the 20 hours have been allocated and taking into account Fred's ability to perform the task when calculating the time required. This can then be repeated from Joan and the Machine and the most suitable resource allocation assessed.

The method described above means that all resources are always levelled and smoothed and are utilised to the maximum and simply elevating a task on the table or bar chart display raises its priority, which causes an instantaneous rescheduling of that task and all lower priority tasks. It is simple to try assigning another resource to see if a better assignment is possible and therefore there is no analysis, levelling or smoothing command required to be input by the user as the resources are always levelled.

In a second way of using the invention, if a task needs a specific skill such as 100 programmer/days, 30 engineer/hours the invention performs the same exercise for every resource that has the required skill, thus recognising each resource's ability percentage rating with respect to the required skill. It then 'suggests' the resource that could finish the task first. The same happens for a 'Team' or resource pool in that the resource can comprises a number or team of people which are regarded as being fully interchangeable and thereby allow the task to be performed by the team. The user may therefore accept, over-ride or leave the suggestion to one side until all the analysis of resources has occurred. This means that long term capacity planning is always cared for and short-term needs are met.

A yet further example of the invention is now described wherein it is illustrated how the invention allows the suggestion of the most suitable resource or resources to use when a task in a project is scheduled and the suggestion can be made with respect to user preferred criteria so that the user has to confirm the suggestion for the task before the resource or resources will be allocated. Once confirmed then the performance of the task is transferred to the workplan for that resource.

In this example, the user defines the resource's ability to perform a skill. As explained the value can be given as a percentage value in comparison to a predetermined value such that in this embodiment the resource ability is indicated as average (100%), better than average (between 101% and 999%) or below average (between 1% and 99%) at performing each identified skill.

This allows each resource to be defined in terms of any number of skills and for each skill and ability at that skill. For example a specific programmer may be 100% effective as a C++ programmer, 50% effective as a VB programmer and 120% effective in database manipulation.

When scheduling, the time for completion of a task is calculated for each resource with respect to the ability rating.

In addition the resources are collected into groups or teams such as illustrated in the Table 4 below which indicates an outline very much like the outline available for grouping tasks.

The table has a number of levels.

A column called 'Resource Pool' (which may be changed by the user to Department) can be added to a task table. This allows the user to select a resource from a specific pool.

Thus a resource hierarchy can be:

Table 4

Resource Group : Programming Department
- Location: Utrecht
  - Unix
    - Fred
    - Mary
    - Azif
  - PC
    - Albert
    - Victoria
    - Joshua
- Location: London
  - Joe
  - Liz
  - John

If the planner decides to schedule by skill they can specify the resource group from which the appropriate resource should be selected. This limits the method to choosing a resource from the list of people contained within the selected group.

Thus, in this example and with reference to the group shown in Table 4, a task is scheduled by skill and the required skill is programming, which is a skill everyone possesses.

If the planner selects a pool of: Hydra can choose from: Utrecht: Fred, Mary, Azif, Albert,Victoria, Joshua and in London Joe, Liz or John

Thus the user can try each of these resources or can allocate each of these people appropriate programming skills e.g. C++, VBA, and Cobol and/or also group them by particular platform apparatus (Unix, PC) and so essentially provides a two dimensional skills matrix.

The groupings can therefore be selected on a task by task basis in which case the method suggests a resource for each task from the appropriate resource group. The groups can be selected on a task heading by heading basis and so resources from the chosen group are considered for completion of tasks within the chosen heading.

In an alternative form the skill requirement may be left blank with a group selected and this means that the method will select anyone from that group regardless of skill but with respect to their availability so that it will be seen that the user can adapt the method to suit their particular requirements for particular tasks, i.e. the user manipulates the method rather than the method restricting the possibilities for the user. This allows for the situation where a task is required to be done which does not relate to the normal skill base and which can be done by any team member and so the user can selectively allow resource selection criteria to be weighted or be removed to suit particular requirements.

Figure 1 illustrates a screen display in one embodiment which is generated when the method is computer implemented as is typically the case. In this case the task 4 is part of "Project

2000" 2 and is to check Millennium compliance of apparatus. A start date 6 is indicated along with entries for how the task is to be performed 8, the time required 10, skill required 12, resource location 14, identity of the assigned resource 16 and the ability value rating for that resource 18. Thus, as shown, an engineer resource from the IT department called Robert has been allocated to the task and has an ability rating of 60%.

The current invention therefore actually does achieve the desired goal of telling the user the resource identities who should perform each task.

It is therefore necessary to be able to balance prioritisation against the availability of the team and the effectiveness of the team members. This can be done by re-organising the tasks in priority order or allowing the team leader the ability to perform a priority over-ride to show the sequence in which tasks must be considered for the purposes of the model.

Thus it will be seen that the invention which is the subject of this application represents a significant improvement in the ability to schedule resources which are available to tasks which are required to be completed by ensuring that the resources allocated are best suited to perform the task and that the particular allocation allows the earliest possible completion date to be obtained and ensures that no resource is accidentally overloaded. The method can be completed by manual calculation but it is envisaged that a far more practical approach is to use an appropriate computer implementation where there is provided a database holding details of all the available resources which are present within an organisation and/or which can be outsourced. Each resource is provided with an indication of skills, an ability rating value of each of the skills and whether that resource is

part of a group or groups of resources. This information is held in the database memory such that when a task is input into the system for completion and the skill or skills required for the task identified, each of the resources in the database which has the required skill is accessed and the time required for that resource to perform the task, calculated with regard to the stored criteria and also the existing schedule for the resource and the priority of the task with respect to the other tasks to which the resource is already allocated. Once the completion time for each of the appropriate resources have been identified, the system suggests the appropriate resource to the user, typically being that which can provide the earliest completion time, but it could also be in terms of expense, use of resources or other predesignated criteria.

The invention sets out a method and system by which it is possible to rationally compare items of planned work or tasks in terms of their resource requirements, schedule requirements and relative prioritisation. In comparison to prior art systems, the current invention actually suggests the most appropriate resource whereas the prior art systems merely guess which resource to use from a pool of resources. Furthermore the prior art systems require the user to analyse the possible options whereas the current invention allows the user to ignore accept o override the solutions proposed. Due to the prioritisation of the current invention, over -demand on resources are not possible in the current invention while they are in the prior art systems. Furthermore the prioritisation can be adjusted to explore possible alternatives and the performance of tasks can , if required, be broken into sections to suit prioritisation and allocation of resources.

Claims

1 A method for forming a schedule of allocation of given resources to a series of tasks which, in combination, are required to be performed to complete a project, said method comprising the steps of;
defining each of the resources available to be selected by the user,
identifying the tasks to be performed to complete the project and placing the same in an order with regard to previous tasks and following tasks,
allocating a time for completion of each task,
identifying the resource or resources required to perform the task,
considering all available and relevant resources for potential use in performing that task until those resource or resources which allow completion of the task in the required manner are identified and allocated; and
repeating the steps for each task until the available resources have been allocated to allow all of the tasks for the project to be completed and characterised in that the resources are defined in terms of available time, skill or skills and a value indicative of the resource ability to perform the skill or skills.

2 A method according to claim 1 characterised in that the resource time availability, with regard to human resources, is calculated in terms of working and non-working hours, and other identified commitments.

3 A method according to claim 1 characterised in that the resource time availability, with regard to apparatus, is calculated with regard to downtime requirements.

4 A method according to claim 1 characterised in that the number of such resources available to perform the project tasks is noted and each resource is analysed in terms of the skill or skills which it offers with respect to the tasks to be performed and also the rating value for that resource which indicates the ability for the resource to perform each skill.

5 A method according to claim 4 characterised in that the rating value is given as a percentage value.

6 A method according to claim 5 characterised in that the rating values increase from 0% to 100% with increasing ability to perform a particular skill.

7 A method according to claim 1 characterised in that the tasks that need to be performed for completion of a project are identified and each task is defined in terms of its predecessor tasks and restraints with respect to other tasks.

8 A method according to claim 1 characterised in that the method includes the entry of deadlines for the completion of certain tasks within the project to be performed.

9 A method according to claim 1 characterised in that the work content for each task is defined in relation to time units of resources.

10 A method according to claim 1 characterised in that a priority rating can be allocated to each task or a group of tasks with respect to another task or group of tasks.

11 A method according to claim 10 characterised in that the priority rating is with respect to a task or tasks within the same project group of tasks.

12 A method according to claim 10 characterised in that the priority rating is with respect to another task or tasks to be performed by the resource or resources.

13 A method according to claim 1 characterised in that if a resource is unavailable for a period of time during the time for completion of a task, another available resource, which may have a lower ability value rating can be allocated to that task for the said period of time.

14 A method according to claim 1 characterised in that the completion of a task is achieved by a group of resources with the required skill and said resources interchangeable for periods of time within the task completion time.

15 A method according to claim 14 characterised in that resources in the group have different ability rating values for that skill.

16 A method for the scheduling of resources to perform a selected task from a group of tasks required to be completed to perform a project, said method comprising, for said task, the following steps;

the earliest possible start date of the task is calculated with respect to the preceding tasks which are required to be completed and which relate to the particular task under analysis;

a first resource with the required skill is selected and its availability calculated with regard to the start date of the task;

any non available periods for the resource are added to the time to be taken;

any time periods for the resource which are assigned to higher priority tasks are added to the time to be taken;

the task is scheduled using the selected resource with respect to the ability of the resource to perform the work of the task and the completion date is calculated;

the next resource that displays the required skill is selected and the steps are repeated and so on until all appropriate resources have been tested for respective availability; and characterised in that the task is scheduled for completion by utilising the resource or combination of resources which provide completion of the task with the earliest completion date.

17 A method according to claim 16 characterised in that in the assessment of each resource, a skill ability rating value for that resource in relation to the particular skill required for the task is taken into account in calculating the time required for that resource to complete the task.

18 A method according to claim 16 characterised in that the task is allocated a priority rating with respect to other tasks prior to analysis of the resource availability.

19 A method according to claim 18 characterised in that the method includes the step of assessing the priority rating for the

task with respect to the priority rating of any other tasks to which that resource is allocated.

20 A method according to any of the preceding claims characterised in that the method is computer implemented and data is input into the computer to represent the tasks constituting the project, the dependency of the task on other tasks and data representing the available resources..

21 A method according to claim 20 characterised in that for each task, the calculation of the start and completion date of the task is repeated for each of the resources in a computer database which is identified as having a skill ability to perform the task.

22 A method according to claim 21 characterised in that the database includes for each of said resources an ability rating value for the resource to perform the identified skill and said ability rating value is taken into account when calculating the time required for the resource to complete the task.

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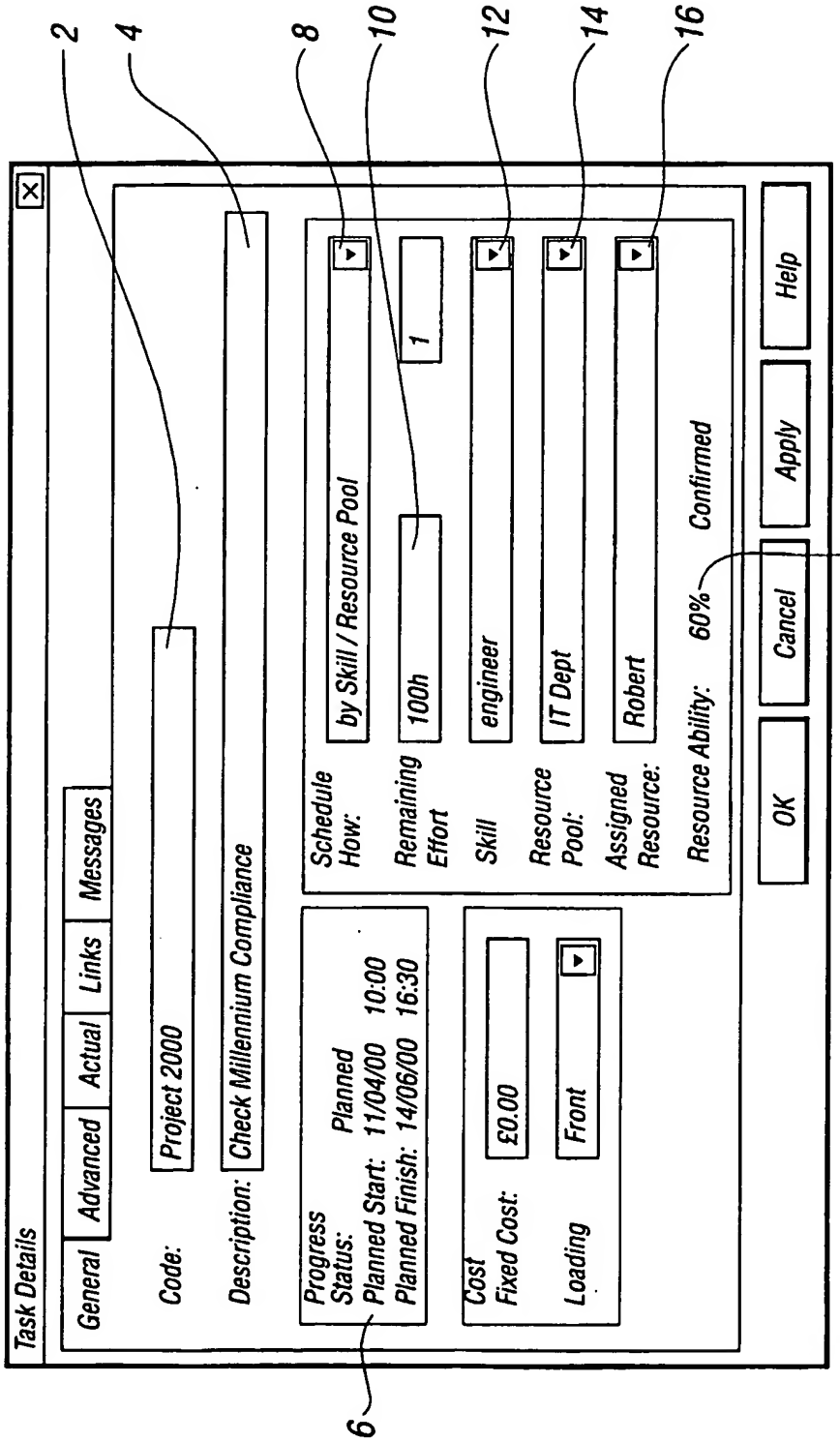
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Remaining
Effort
100h
1
Skill
engineer
Resource
Pool:
IT Dept
Assigned
Resource:
Robert
Resource Ability:
60%
Confirmed
OK
Cancel
Apply
Help
2
4
6
8
10
12
14
16
18

FIG. 1